

Gis For Enhanced Electric Utility Performance Artech House Power Engineering

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Sustainability in Energy and Buildings 2021

John R. Littlewood 2021-09-28 This book contains the proceedings of the 13th KES International Conference on Sustainability and Energy in Buildings 2021 (SEB2021) held in Split, Croatia, during 15-17 September 2021 organized by KES International. SEB21 invited contributions on a range of topics related to sustainable buildings and explored innovative themes regarding sustainable energy systems. The conference formed an exciting chance to present, interact and learn about the latest research and practical developments on the subject. The conference attracted submissions from around the world. Submissions for the Full-Paper Track were subjected to a blind peer-review process. Only the best of these were selected for presentation at the conference and publication in these proceedings. It is intended that this book provides a useful and informative snapshot of recent research developments in the important and vibrant area of sustainability in energy and buildings.

Principles of Geographic Information Systems

Rolf A. de By 2004

Classification Methods for Remotely Sensed Data Paul Mather 2001-12-06 Remote sensing is an integral part of geography, GIS and cartography, used by academics in the field and professionals in all sorts of occupations. The

1990s saw the development of a range of new methods of classifying remote sensing images and data, both optical imaging and microwave imaging. This comprehensive survey of the various techniques pul

Lithium-Ion Batteries and Applications: A Practical and Comprehensive Guide to Lithium-Ion Batteries and Arrays, from Toys to Towns, Volume 2, Applications

Davide Andrea 2020-06-30 This comprehensive, two-volume resource provides a thorough introduction to lithium ion (Li-ion) technology. Readers get a hands-on understanding of Li-ion technology, are guided through the design and assembly of a battery, through deployment, configuration and testing. The book covers dozens of applications, with solutions for each application provided. Volume Two focuses on small batteries in consumer products and power banks, as well as large low voltage batteries in stationary or mobile house power, telecom, residential, marine and microgrid. Traction batteries, including passenger, industrial, race vehicles, public transit, marine, submarine and aircraft are also discussed. High voltage stationary batteries grid-tied and off-grid are presented, exploring their use in grid quality, arbitrage and back-up, residential, microgrid, industrial, office buildings. Finally, the book explores what happens when accidents occur, so readers may avoid these mistakes. Written by a

prominent expert in the field and packed with over 500 illustrations, these volumes contain solutions to practical problems, making it useful for both the novice and experienced practitioners.

A Systems Approach to Lithium-Ion Battery Management Phil Weicker 2013-11-01 The advent of lithium ion batteries has brought a significant shift in the area of large format battery systems. Previously limited to heavy and bulky lead-acid storage batteries, large format batteries were used only where absolutely necessary as a means of energy storage. The improved energy density, cycle life, power capability, and durability of lithium ion cells has given us electric and hybrid vehicles with meaningful driving range and performance, grid-tied energy storage systems for integration of renewable energy and load leveling, backup power systems and other applications. This book discusses battery management system (BMS) technology for large format lithium-ion battery packs from a systems perspective. This resource covers the future of BMS, giving us new ways to generate, use, and store energy, and free us from the perils of non-renewable energy sources. This book provides a full update on BMS technology, covering software, hardware, integration, testing, and safety.

Advances in Communication, Devices and Networking Rabindranath Bera 2019-02-15 The book covers recent trends in the field of devices, wireless communication and networking. It presents the outcomes of the International Conference in Communication, Devices and Networking (ICCDN 2018), which was organized by the Department of Electronics and Communication Engineering, Sikkim Manipal Institute of Technology, Sikkim, India on 2-3 June, 2018. Gathering cutting-edge research papers prepared by researchers, engineers and industry professionals, it will help young and experienced scientists and developers alike to explore new perspectives, and offer them inspirations on addressing real-world problems in the field of electronics, communication, devices and networking.

Techniques and Applications of Digital Watermarking and Content Protection Michael Arnold 2003 This informative, new resource presents the first comprehensive

treatment of silicon-germanium heterojunction bipolar transistors (SiGe HBTs). It offers you a complete, from-the-ground-up understanding of SiGe HBT devices and technology, from a very broad perspective. The book covers motivation, history, materials, fabrication, device physics, operational principles, and circuit-level properties associated with this new cutting-edge semiconductor device technology. Including over 400 equations and more than 300 illustrations, this hands-on reference shows you in clear and concise language how to design, simulate, fabricate, and measure a SiGe HBT.

Design and Analysis of Large Lithium-Ion Battery Systems Shriram Santhanagopalan 2014-12-01 This new resource provides you with an introduction to battery design and test considerations for large-scale automotive, aerospace, and grid applications. It details the logistics of designing a professional, large, Lithium-ion battery pack, primarily for the automotive industry, but also for non-automotive applications. Topics such as thermal management for such high-energy and high-power units are covered extensively, including detailed design examples. Every aspect of battery design and analysis is presented from a hands-on perspective. The authors work extensively with engineers in the field and this book is a direct response to frequently-received queries. With the authors' unique expertise in areas such as battery thermal evaluation and design, physics-based modeling, and life and reliability assessment and prediction, this book is sure to provide you with essential, practical information on understanding, designing, and building large format Lithium-ion battery management systems.

Illuminating the Path James J. Thomas 2005 *Illuminating the Path* is a call to action for researchers and developers to help safeguard our nation by transforming information overload into insights through visual analytics - the science of analytical reasoning facilitated by interactive visual interfaces. Achieving this will require interdisciplinary, collaborative efforts of researchers from throughout academia, industry, and the national laboratories.

Power System Transients Akihiro Ametani 2016-11-18 This new edition covers a wide area from transients in power systems—including the

basic theory, analytical calculations, EMTP simulations, computations by numerical electromagnetic analysis methods, and field test results—to electromagnetic disturbances in the field on EMC and control engineering. Not only does it show how a transient on a single-phase line can be explained from a physical viewpoint, but it then explains how it can be solved analytically by an electric circuit theory. Approximate formulas, which can be calculated by a pocket calculator, are presented so that a transient can be analytically evaluated by a simple hand calculation. Since a real power line is three-phase, this book includes a theory that deals with a multi-phase line for practical application. In addition, methods for tackling a real transient in a power system are introduced. This new edition contains three completely revised and updated chapters, as well as two new chapters on grounding and numerical methods.

Dynamic Data Driven Applications Systems

Frederica Darema 2020-11-02 This book constitutes the refereed proceedings of the Third International Conference on Dynamic Data Driven Application Systems, DDDAS 2020, held in Boston, MA, USA, in October 2020. The 21 full papers and 14 short papers presented in this volume were carefully reviewed and selected from 40 submissions. They cover topics such as: digital twins; environment cognizant adaptive-planning systems; energy systems; materials systems; physics-based systems analysis; imaging methods and systems; and learning systems.

Introduction to GPS

Ahmed El-Rabbany 2002 If you're looking for an up-to-date, easy-to-understand treatment of the GPS (Global Positioning System), this one-of-a-kind resource offers you the knowledge you need for your work, without bogging you down with advanced mathematics. It addresses all aspects of the GPS, emphasizes GPS applications, examines the GPS signal structure, and covers the key types of measurement being utilized in the field today.

Electronic Systems and Intelligent Computing

Pradeep Kumar Mallick 2020-09-22 This book presents selected, high-quality research papers from the International Conference on Electronic Systems and Intelligent Computing (ESIC 2020), held at NIT Yupia, Arunachal Pradesh, India, on

2 - 4 March 2020. Discussing the latest challenges and solutions in the field of smart computing, cyber-physical systems and intelligent technologies, it includes papers based on original theoretical, practical and experimental simulations, developments, applications, measurements, and testing. The applications and solutions featured provide valuable reference material for future product development.

Modelling and Simulation of Electrical Energy Systems Through a Complex Systems Approach Using Agent-Based Models

Enrique Alberto Kremers 2014-07-31

Complexity science aims to better understand the processes of both natural and man-made systems which are composed of many interacting entities at different scales. A disaggregated approach is proposed for simulating electricity systems, by using agent-based models coupled to continuous ones. The approach can help in acquiring a better understanding of the operation of the system itself, e.g. on emergent phenomena or scale effects; as well as in the improvement and design of future smart grids.

Proceedings of the International Conference on Soft Computing Systems

L. Padma Suresh 2015-12-28 The book is a collection of high-quality peer-reviewed research papers presented in International Conference on Soft Computing Systems (ICSCS 2015) held at Noorul Islam Centre for Higher Education, Chennai, India. These research papers provide the latest developments in the emerging areas of Soft Computing in Engineering and Technology. The book is organized in two volumes and discusses a wide variety of industrial, engineering and scientific applications of the emerging techniques. It presents invited papers from the inventors/originators of new applications and advanced technologies.

Spatial Analysis in Field Primatology

Francine L. Dolins 2021-02-18 A primatologist's guide to using geographic information systems (GIS); from mapping and field accuracy, to tracking travel routes and the impact of logging.

Proceeding of the Second International Conference on Microelectronics, Computing & Communication Systems (MCCS 2017)

Vijay Nath 2018-07-30 The volume presents high quality papers presented at the Second

International Conference on Microelectronics, Computing & Communication Systems (MCCS 2017). The book discusses recent trends in technology and advancement in MEMS and nanoelectronics, wireless communications, optical communication, instrumentation, signal processing, image processing, bioengineering, green energy, hybrid vehicles, environmental science, weather forecasting, cloud computing, renewable energy, RFID, CMOS sensors, actuators, transducers, telemetry systems, embedded systems, and sensor network applications. It includes original papers based on original theoretical, practical, experimental, simulations, development, application, measurement, and testing. The applications and solutions discussed in the book will serve as a good reference material for future works.

Environmental Geoinformatics Joseph L. Awange 2013-06-13 There is no doubt that today, perhaps more than ever before, humanity faces a myriad of complex and demanding challenges. These include natural resource depletion and environmental degradation, food and water insecurity, energy shortages, diminishing biodiversity, increasing losses from natural disasters, and climate change with its associated potentially devastating consequences, such as rising sea levels. These human-induced and natural impacts on the environment need to be well understood in order to develop informed policies, decisions, and remedial measures to mitigate current and future negative impacts. To achieve this, continuous monitoring and management of the environment to acquire data that can be soundly and rigorously analyzed to provide information about its current state and changing patterns, and thereby allow predictions of possible future impacts, are essential. Developing pragmatic and sustainable solutions to address these and many other similar challenges requires the use of geodata and the application of geoinformatics. This book presents the concepts and applications of geoinformatics, a multidisciplinary field that has at its core different technologies that support the acquisition, analysis and visualization of geodata for environmental monitoring and management. We depart from the 4D to the 5D data paradigm, which defines geodata accurately, consistently, rapidly and completely,

in order to be useful without any restrictions in space, time or scale to represent a truly global dimension of the digital Earth. The book also features the state-of-the-art discussion of Web-GIS. The concepts and applications of geoinformatics presented in this book will be of benefit to decision-makers across a wide range of fields, including those at environmental agencies, in the emergency services, public health and epidemiology, crime mapping, environmental management agencies, tourist industry, market analysis and e-commerce, or mineral exploration, among many others. The title and subtitle of this textbook convey a distinct message. Monitoring -the passive part in the subtitle - refers to observation and data acquisition, whereas management - the active component - stands for operation and performance. The topic is our environment, which is intimately related to geoinformatics. The overall message is: all the mentioned elements do interact and must not be separated. Hans-Peter Bahr, Prof. Dr.-Ing. Dr.h.c., Karlsruhe Institute of Technology (KIT), Germany.

Power Grid Resiliency for Adverse Conditions Nicholas Abi-Samra 2017-09-30 Written by a leading expert in the field, this practical book offers a comprehensive understanding of the impact of extreme weather and the possible effects of climate change on the power grid. The impact and restoration of floods, winter storms, wind storms, and hurricanes as well as the effects of heat waves and dry spells on thermal power plants is explained in detail. This book explores proven practices for successful restoration of the power grid, increased system resiliency, and ride-through after extreme weather and provides readers with examples from super storm Sandy. This book presents the effects of lack of ground moisture on transmission line performance and gives an overview of line insulation coordination, stress-strength analysis, and tower insulation strength, and then provides readers with tangible solutions. Structural hardening of power systems against storms, including wind pressure, wood poles, and vegetation management is covered. Moreover, this book provides suggestions for practical implementations to improve future smart grid resiliency.

Engineering Asset Management Dimitris Kiritsis 2011-02-03 Engineering Asset Management discusses state-of-the-art trends and developments in the emerging field of engineering asset management as presented at the Fourth World Congress on Engineering Asset Management (WCEAM). It is an excellent reference for practitioners, researchers and students in the multidisciplinary field of asset management, covering such topics as asset condition monitoring and intelligent maintenance; asset data warehousing, data mining and fusion; asset performance and level-of-service models; design and life-cycle integrity of physical assets; deterioration and preservation models for assets; education and training in asset management; engineering standards in asset management; fault diagnosis and prognostics; financial analysis methods for physical assets; human dimensions in integrated asset management; information quality management; information systems and knowledge management; intelligent sensors and devices; maintenance strategies in asset management; optimisation decisions in asset management; risk management in asset management; strategic asset management; and sustainability in asset management.

Principles and methods of data cleaning
2005

Terrain Analysis John P. Wilson 2000-08-03 The only reference on the use of GIS and related technologies in terrain analysis In this landmark publication, reflecting the collaborative effort of thirteen research groups based in four countries, leading experts detail how GIS and related technologies, such as GPS and remote sensing, are now being used, with the aid of computer modeling, in terrain analysis. Continuing the innovative work of Professor Ian Moore, a visionary who saw terrain analysis as a robust method for modeling the large areas and complex spatial patterns of environmental systems, Terrain Analysis puts into action TAPES, or Terrain Analysis Programs for Environmental Sciences, Dr. Moore's innovative tool for terrain analysis. The book's contributors describe how TAPES are applied to specific geomorphologic problems, explain the algorithms used in current terrain analysis software, and examine the interpretation and

use of terrain attributes in predictive models. With expert coverage of terrain analysis in the digital age, Terrain Analysis will be welcomed by ecologists, environmental engineers, geographers, and hydrologists who increasingly depend on GIS, GPS, and remote sensing. A review of multi-criteria decision-making applications to solve energy management problems: Two decades from 1995 to 2015 Abbas Mardania Energy management problems associated with rapid institutional, political, technical, ecological, social and economic development have been of critical concern to both national and local governments worldwide for many decades; thus, addressing such issues is a global priority.

Microelectronics, Electromagnetics and Telecommunications P. Satish Rama

Chowdary 2021-06-24 This book discusses the latest developments and outlines future trends in the fields of microelectronics, electromagnetics and telecommunication. It includes original research presented at the International Conference on Microelectronics, Electromagnetics and Telecommunication (ICMEET 2019), organized by the Department of ECE, Raghu Institute of Technology, Andhra Pradesh, India. Written by scientists, research scholars and practitioners from leading universities, engineering colleges and R&D institutes around the globe, the papers share the latest breakthroughs in and promising solutions to the most important issues facing today's society.

Introduction to Geospatial Information and Communication Technology (GeoICT) Rifaat Abdalla 2016-07-25 This book is designed to help students and researchers understand the latest research and development trends in the domain of geospatial information and communication (GeoICT) technologies. Accordingly, it covers the fundamentals of geospatial information systems, spatial positioning technologies, and networking and mobile communications, with a focus on OGC and OGC standards, Internet GIS, and location-based services. Particular emphasis is placed on introducing GeoICT as an integrated technology that effectively bridges various information-technology domains.

Future U.S. Workforce for Geospatial Intelligence National Research Council

2013-04-28 We live in a changing world with multiple and evolving threats to national security, including terrorism, asymmetrical warfare (conflicts between agents with different military powers or tactics), and social unrest. Visually depicting and assessing these threats using imagery and other geographically-referenced information is the mission of the National Geospatial-Intelligence Agency (NGA). As the nature of the threat evolves, so do the tools, knowledge, and skills needed to respond. The challenge for NGA is to maintain a workforce that can deal with evolving threats to national security, ongoing scientific and technological advances, and changing skills and expectations of workers. Future U.S. Workforce for Geospatial Intelligence assesses the supply of expertise in 10 geospatial intelligence (GEOINT) fields, including 5 traditional areas (geodesy and geophysics, photogrammetry, remote sensing, cartographic science, and geographic information systems and geospatial analysis) and 5 emerging areas that could improve geospatial intelligence (GEOINT fusion, crowdsourcing, human geography, visual analytics, and forecasting). The report also identifies gaps in expertise relative to NGA's needs and suggests ways to ensure an adequate supply of geospatial intelligence expertise over the next 20 years.

Advances in Mobile Mapping Technology C. Vincent Tao 2007-02-08 The growing market penetration of Internet mapping, satellite imaging and personal navigation has opened up great research and business opportunities to geospatial communities. Multi-platform and multi-sensor integrated mapping technology has clearly established a trend towards fast geospatial data acquisition. Sensors can be mounted on various pla

Basics of Geomatics Mario A. Gomasasca 2009-09-18 Geomatics is a neologism, the use of which is becoming increasingly widespread, even if it is not still universally accepted. It includes several disciplines and techniques for the study of the Earth's surface and its environments, and computer science plays a decisive role. A more meaningful and appropriate expression is Geospatial Information or GeoInformation. Geospatial Information embeds topography in its more modern forms (measurements with electronic instrumentation,

sophisticated techniques of data analysis and network compensation, global satellite positioning techniques, laser scanning, etc.), analytical and digital photogrammetry, satellite and airborne remote sensing, numerical cartography, geographical information systems, decision support systems, WebGIS, etc. These specialized fields are intimately interrelated in terms of both the basic science and the results pursued: rigid separation does not allow us to discover several common aspects and the fundamental importance assumed in a search for solutions in the complex survey context. The objective pursued by Mario A. Gomasasca, one that is only apparently modest, is to publish an integrated text on the surveying theme, containing simple and comprehensible concepts relevant to experts in Geospatial Information and/or specifically in one of the disciplines that compose it. At the same time, the book is rigorous and synthetic, describing with precision the main instruments and methods connected to the multiple techniques available today.

What Have We Learned about Intelligent Transportation Systems? 2000

Understanding GPS Elliott D. Kaplan 2006 Appendix B: Stability Measures for Frequency Sources 665 Appendix C: Free-Space Propagation Loss 669; About the Authors 675; Index 683; Mobile Communications Library.

GIS for Enhanced Electric Utility Performance Bill Meehan 2013-07-01 This book describes how geospatial technology in the form of a modern enterprise geographic information system (GIS) can be applied to all aspects of the electric utility business from Smart Grid to generation to transmission to distribution to the retail supply of electricity to customers. This book appeals to readers that are interested not only in the technical details of a GIS enabled electric system, but also how such a system works in the real business world.

Public Transport Planning with Smart Card Data Fumitaka Kurauchi 2017-02-17 Collecting fares through "smart cards" is becoming standard in most advanced public transport networks of major cities around the world. Travellers value their convenience and operators the reduced money handling fees. Electronic tickets also make it easier to integrate fare systems, to create complex time and space

differentiated fare systems, and to provide incentives to specific target groups. A less-utilised benefit is the data collected through smart cards. Records, even if anonymous, provide for a much better understanding of passengers' travel behaviour as current literature shows. This information can also be used for better service planning. *Public Transport Planning with Smart Card Data* handles three major topics: how passenger behaviour can be estimated using smart card data, how smart card data can be combined with other trip databases, and how the public transport service level can be better evaluated if smart card data is available. The book discusses theory as well as applications from cities around the world and will be of interest to researchers and practitioners alike who are interested in the state-of-the-art as well as future perspectives that smart card data will bring.

The Advanced Smart Grid: Edge Power Driving Sustainability, Second Edition Andres Carvallo 2015-03-01 Placing emphasis on practical "how-to" guidance, this cutting-edge resource provides a first-hand, insider's perspective on the advent and evolution of smart grids in the 21st century. This book presents engineers, researchers, and students with the building blocks that comprise basic smart grids, including power plant, transmission substation, distribution, and meter automation. Moreover, this forward-looking volume explores the next step of this technology's evolution. It provides a detailed explanation of how an advanced smart grid incorporates demand response with smart appliances and management mechanisms for distributed generation, energy storage, and electric vehicles. This updated second edition focuses on the disruptive impact of DER. This new edition also includes a glossary with well over 100 acronyms and terms, acknowledging the tremendous challenge for a student of smart energy and smart grid to grasp this complex industry.

BioGeomancer 2006

Battery Management Systems, Volume I: Battery Modeling Gregory L. Plett 2015-09-01 Large-scale battery packs are needed in hybrid and electric vehicles, utilities grid backup and storage, and frequency-regulation applications. In order to maximize battery-pack safety,

longevity, and performance, it is important to understand how battery cells work. This first of its kind new resource focuses on developing a mathematical understanding of how electrochemical (battery) cells work, both internally and externally. This comprehensive resource derives physics-based micro-scale model equations, then continuum-scale model equations, and finally reduced-order model equations. This book describes the commonly used equivalent-circuit type battery model and develops equations for superior physics-based models of lithium-ion cells at different length scales. This resource also presents a breakthrough technology called the "discrete-time realization algorithm" that automatically converts physics-based models into high-fidelity approximate reduced-order models.

Energy Harvesting for Autonomous Systems Stephen Beeby 2014-05-14 This unique resource provides a detailed understanding of the options for harvesting energy from localized, renewable sources to supply power to autonomous wireless systems. You are introduced to a variety of types of autonomous system and wireless networks and discover the capabilities of existing battery-based solutions, RF solutions, and fuel cells. The book focuses on the most promising harvesting techniques, including solar, kinetic, and thermal energy. You also learn the implications of the energy harvesting techniques on the design of the power management electronics in a system. This in-depth reference discusses each energy harvesting approach in detail, comparing and contrasting its potential in the field.

Geospatial Technologies in Land Resources Mapping, Monitoring and Management G. P. Obi Reddy 2018-09-11 This book offers an overview of geospatial technologies in land resource mapping, monitoring and management. It consists of four main parts: geospatial technology principles and applications; geospatial technologies in land resources mapping; geospatial technologies in land resources monitoring; and geospatial technologies in land resources management. Each part is divided into detailed chapters that include illustrations and tables. The authors, from leading institutes, such as the ICAR-NBSS&LUP, IIT, NRSC, ICRISAT, share their experiences and offer case studies to provide

advanced insights into the field. It is a valuable resource for the scientific community, the teaching community, extension scientists at research institutes and agricultural universities and colleges as well as those involved in planning and managing land resources for sustainable agriculture and livelihood security.

Consultants & Consulting Organizations

Directory Cengage Gale 2009-05-08

Urban Informatics Wenzhong Shi 2021-04-06

This open access book is the first to systematically introduce the principles of urban informatics and its application to every aspect of the city that involves its functioning, control, management, and future planning. It introduces new models and tools being developed to understand and implement these technologies that enable cities to function more efficiently - to become 'smart' and 'sustainable'. The smart city has quickly emerged as computers have become ever smaller to the point where they can be embedded into the very fabric of the city, as well as being central to new ways in which the population can communicate and act. When cities are wired in this way, they have the potential to become sentient and responsive,

generating massive streams of 'big' data in real time as well as providing immense opportunities for extracting new forms of urban data through crowdsourcing. This book offers a comprehensive review of the methods that form the core of urban informatics from various kinds of urban remote sensing to new approaches to machine learning and statistical modelling. It provides a detailed technical introduction to the wide array of tools information scientists need to develop the key urban analytics that are fundamental to learning about the smart city, and it outlines ways in which these tools can be used to inform design and policy so that cities can become more efficient with a greater concern for environment and equity.

Big Data Analytics Strategies for the Smart Grid

Carol L. Stimmel 2016-04-19 By implementing a comprehensive data analytics program, utility companies can meet the continually evolving challenges of modern grids that are operationally efficient, while reconciling the demands of greenhouse gas legislation and establishing a meaningful return on investment from smart grid deployments. Readable and accessible, Big Data Analytic